REMARKS

Claims 1-30 are pending. Claims 23-30 have been added. Support for the added claims and all the amendments is found in Figs. 14-17 and the description in the specification of these figures on page 23, where the linearly moving gas shield 14 provides a first variable gas aperture 24 (Fig. 16) for precisely controlling a low gas conductance during the deposition on the substrate, while a second variable gas aperture 22 (Fig. 17) provides a very open gas aperture for rapidly purging gases after the deposition time. The shadow ring of Claim 30 is shown as shadow ring 28 in Figs. 14 and 15 and described on page 22.

In the April 19, 2005 final office action, the examiner rejected all claims in view of various combinations of Sherman, Gruenwald, Suntola, Suzuki, Lei, and other art.

An example of Applicants' claimed technique of controlling gas flow conductance in a process chamber is shown in Figs. 15/16 (low conductance position) and Fig. 17 (high conductance position), where gas flows through the variable aperture of the lower gas path 24 as the shield 14 moves up or down. In Fig. 17, the shield 14 is down its maximum extent. The lower gas path provides a highly controllable low conductance path while the upper gas path provides a high conductivity path for purging gases. The variable apertures substantially circumscribe the periphery of the substrate. By the claimed "feature" substantially circumscribing the periphery of the substrate, a substantially uniform flow of gas is achieved.

In the April 26, 2005 telephone conversation with the examiner, the examiner indicated that he did not fully appreciate the "translating" limitation in the claim. On pages 6-7 of the April 19, 2005 office action, the examiner indicated that Gruenwald's rotation of a perforated plate on the top of a chamber encompassed the claimed "translating." In the conversation with the examiner, Applicants' attorney pointed out that the claim term "translation" precludes rotation. Accordingly, the examiner verbally dropped the rejection of the claims over the cited art and requested that Applicants amend the claims to better define the variable aperture to one that moves in a linear direction substantially perpendicular to a surface of the substrate.

That amendment is made herein.

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Accordingly, the Gruenwald system fails to teach or suggest translating a feature to vary an aperture for gas conductance, fails to teach or suggest moving a feature in a linear motion in a direction substantially perpendicular to a surface of the substrate to varying an aperture for gas conductance, and fails to teach or suggest any translatable feature that substantially circumscribes a periphery of the substrate.

The examiner relied on Lei for somehow suggesting to modify Gruenwald's valve to translate and substantially circumscribe a periphery of the substrate. However, Lei describes **fixed openings** for exhaust gasses (Figs. 8 and 9). Fig. 8 is a top down view of an opening 242 around the wafer 14. The opening 242 does not translate or change in any way so has absolutely nothing to do with varying the conductance of gas flow, which is the focus of Applicants' invention. As shown in Fig. 9, between the opening 242 and the wafer is a hollow channel 250 with vertical openings 248 to more uniformly withdraw the gasses. The openings 248 do not translate or change so have absolutely nothing to do with varying the conductance of gas flow.

Independent Claims 19 and 20 are allowable for similar reasons since they both include the feature of translating a feature substantially circumscribing a periphery of the substrate for varying an aperture for gas conductance.

Applicant has discovered a new reference, Japanese application JP 10-64850A (included on enclosed PTO 1449) to NEC. The '850 application shows a variable gas opening that appears to surround the periphery of the substrate. However, there is no suggestion of the movable feature having "a first aperture portion for forming a first variable conductance path and a second aperture portion for forming a second variable conductance path,... the second aperture portion being configured for providing a gas conductance that is different than a gas conductance achievable using the first aperture portion," as recited in Claim 1. Claim 1 also mentions that the second aperture is used for purging gases. The remaining independent Claim 19 and 20 specifically mention that that second aperture portion provides a gas conductance that is higher than the first aperture portion.

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Applicant's invention provide a vast improvement over the '850 device by rapidly speeding up an ALD process by providing very rapid purging of gases through the second

aperture portion while greatly increasing the precision of the low gas flow conductance by providing a first aperture portion. An ALD process requires many cycles of deposition and purging. In the '850 device, both purging and the deposition process gas control is controlled in the same way by the opening 13. There are no first and second aperture portions with different functions as recited in Applicant's claims.

Accordingly, all claims are allowable over the references, and it is requested that the Examiner issue a Notice of Allowance for all Claims 1-30. If the Examiner's next action is other than the allowance of the claims, the Examiner is respectfully requested to call Applicant's attorney at (408) 382-0480 x202.

Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature 10/19/05 Date

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